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Ronald D. Knutson
Texas A&M University

James W. Richardson
Texas A&M University

Edward G. Smith
Texas A&M University

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IMPACT OF FARM POLICIES ON AGRICULTURE, FARM STRUCTURE, AND RURAL COMMUNITIES¹

Ronald D. Knutson, James W. Richardson, and Edward G. Smith
Agricultural and Food Policy Center, Texas A&M University

ABSTRACT This paper discusses the economic, technological, and political factors affecting farm and rural community structure. It concludes that the economic and technological pressures leading to a more concentrated commercial agriculture are strong and political choices to the contrary will likely fail. This conclusion implies an increased need for pragmatic transition policies.

Introduction

Conditions of financial stress, an expected increase in the rate of technological change, and reduced government involvement in agriculture suggest an acceleration of the trend toward fewer but larger farms. The effects of this trend on rural communities have received little attention. In fact, rural development policy has taken a back seat to urban problems at both state and federal levels.

This article reviews recent studies related to farm policy and farm structure and draws inferences as to the impacts on the future of rural communities.

Factors affecting farm structure

Despite extensive study, there remains considerable debate over the relative importance of the factors affecting the structure of agriculture. It is critical, therefore, that these factors be isolated and their relative importance determined before prescribing policy changes affecting structure. The Office of Technological Assessment (OTA) (1986) study, as well as other studies by Smith (Richardson and Smith 1985a, 1985b; Smith et al. 1984, 1985) and by Tweeten (1984a) make a substantial contribution to isolating the factors affecting structure. These factors include technological change, economies of size (technical and pecuniary), income tax provisions, off-farm income, national economic growth, market conditions, and agricultural policies. These factors are sufficiently complex that only a brief summary statement can be made on each.

Technological change

Cochran (1958) identified technological change as one of the primary forces affecting agriculture. His agricultural treadmill is driven by the forces of technological change. The treadmill indicates that the initial adopters of new

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technology are the first to receive benefits in terms of lower costs and greater profit margins. Lower costs expand output and drive down prices over time as more and more producers adopt the technology. Those farmers who fail to adopt must either accept a lower return to labor and capital or be driven out of business as market prices and their profit margins fall. Farmers who are first to adopt are generally larger, and are certainly the most progressive.

In as much as technology affects structure, policies regarding technological change likewise affect structure. Although often expressed to the contrary, agricultural research and extension are not structurally neutral. The problem does not lie as much with the research or extension programs themselves as with advantages provided to adopters. Large farms, through specialization of labor, can devote more time to management, marketing, and planning, and less time to the physical operations of the farm (Smith 1982). In addition, large farms have more resources at their disposal to effectively adopt new technologies. Large-scale farmers are more likely to have access to research results because they take time to get to know the researchers and attend the more advanced extension meetings. As the agricultural research establishment continues to produce and farmers continue to adopt more complex biological and information technologies, problems of research and extension bias will be accentuated.

Some may suggest that the solution to the problem is simply to slow the rate of technological advance. Such a strategy, however, would seriously undermine the international competitive position of U.S. farmers at a time when they can least afford it. Abandonment of international competitiveness would lead to a significant reduction in our agricultural capacity, and as much as a 40 to 50 percent reduction in acreage (Knutson et al. 1987), which would have an adverse effect on rural communities.

Economies of size

A long-standing debate over the magnitude of economies of size in agriculture finally appears to be reaching a consensus. Large scale farms generally have lower costs of production, particularly when pecuniary economies associated with input purchases and marketing are considered. Smith (1982) found technical economies extending to farms over 3,000 acres in the Texas High Plains. In addition, the larger scale farms were able to buy inputs 5 to 20 percent cheaper and sell their cotton for 4 percent more than smaller farms in the area. Cooke (1986) subsequently found substantial technical economies for corn and wheat farmers in the Midwest and Great Plains, but did not study the extent of pecuniary economies. National costs of production now show that large farms have a definite cost advantage over middle-size and small farms (Tweeten 1984b).

Buxton (1986) has determined that significant economies of size in dairy farms are fully captured by dairy herds of 1,000 cows or more. The combined effect of economies of size and anticipated technological change in the dairy industry have been projected to offer formidable competition

for middle-size dairies located primarily in the Upper Midwest and the Northeast (OTA 1986).

The growing number of studies on economies of size support early work by Krause and Kyle (1971) and by Krenz et al. (1974). Most all economies of size research shows there is an economic incentive for farms to get larger. To stop this progression to larger farms would result in higher food and fiber prices domestically and would make U.S. farmers less competitive in the international markets. On the other hand, larger farms tend to purchase inputs from outside the local market, and thus an agricultural economy made up of only large farms would mean the demise of many rural communities.

Tax policies

There is general agreement that federal income tax provisions that reduce taxable income (interest deduction, depreciation, accelerated cost recovery, capital gains preference, cash accounting, and first year depreciation) or reduce income tax liabilities (investment tax and other credits) offer the incentive for farm growth and generally benefit larger scale farms (Boehlje and Harl 1978; Carman 1972; Dahl 1975; Davenport et al. 1982; Eginton 1980; Raup 1978; Richardson et al 1982; Sissons 1979a; Skees 1983; Stanton). Research by Davenport et al. (1982) and by Nixon and Richardson (1985, 1987) has also shown that income tax deductions and credits grow faster than gross receipts for large-scale, mechanized farms. This is due in part to the greater investment in depreciable assets (machinery) on large farms relative to small and middle-size operations.

Carman (1972) found that reducing federal income tax rates from their 1962 levels to their 1972 levels resulted in doubling the optimal size of farms for some regions of California. Federal income tax changes initiated by the Reagan Administration, starting in 1981, have provided incentives for large farms to grow faster than smaller farms (Richardson et al. 1982; Richard and Nixon 1984). The 1985 proposed income tax change (Treasury II) and the 1985 Tax Reform Act provided greater growth incentives for large crop farms than for small crop farms (Nixon and Richardson 1985, 1987).

Gardner (1978) and Batte and Sonka (1985) have argued that the progressive nature of income taxes offsets some, if not all, of the benefits to large-scale operators. If this was true in the past, it probably will not be true in the future. Since 1981, the Reagan Administration has changed federal income taxes five times, reducing the maximum income tax rate from 70 percent to about 32 percent. This reduced maximum tax rate probably will not offset the economic incentives for future growth in crop and livestock farming operations.

Off-farm income

Availability of off-farm income has a significant effect on farm structure. For small-scale farming operations, off-farm employment provides income to underemployed family

labor resources and needed cash to keep the farming operation solvent. Small-scale Southern High Plains farms are able to remain solvent despite their high costs of production because of substantial off-farm income (Smith 1982). These part-time farmers would be unable to remain on the farm if they were unable to find suitable off-farm employment. The level of off-farm income for these farmers was not generally sufficient to encourage farm growth. Middle-size farms on the Southern High Plains had much lower off-farm incomes because the operator was fully employed on the farm. The loss of off-farm income is partially offset by lower costs of production, so these producers are dependent on the market place for their survival. If the level of non-farm income for middle-size farms increases, their ability to survive and grow by acquiring land is significantly increased (Knight and Richardson 1985; Smith 1982). Similar findings are reported by Smith (1982) for large-scale farms in the Southern High Plains of Texas.

These studies suggest that off-farm income affects structure in two ways. First, it makes small-scale farmers more resilient to changes in prices and market conditions. Second, off-farm income can provide risk capital which middle-size and large-scale farm operations can use to acquire more land and machinery.

National economic growth

Wage rates for farm labor are determined in the national labor market which is driven, not by agriculture, but by the national economy. Real increases in wage rates caused by growth in the national economy encourage farmers more rapidly to adopt labor-saving inputs, e.g., machinery, insecticides, and fertilizer. These labor-saving inputs enable farm operators to farm larger and larger units, thus hastening the progression to fewer but larger farms. This relationship is not new and was mentioned by Heady (1962).

Market conditions

Both the level of market prices and their variability affect the rate at which different size farms grow. Higher market prices increase the internal capital available to acquire machinery and cropland. Smith (1982) observed larger scale farms in the Southern High Plains selling their commodities at a premium and thus gaining more from higher prices than small and middle-size farms.

It has long been held that large-scale farms are better able to manage risk than small and middle-size farms (Tweeten 1984a). If this is true, the increased price variability experienced in agriculture since 1973 has accelerated the move to fewer but larger farms. This hypotheses has been tested by Duffy et al. (1986). They have shown that increasing price variability, in the presence of current farm programs, accelerates the rate of growth for crop farms. When price variability is reduced, the rate of growth for all size farms decreases.

Farm policies

Economists do not agree as to the effects of farm policy on the structure of agriculture. Spitze et al. (1980) argues that farm programs have not affected the size or the number of farms in the aggregate. Tweeten (1984a, p. 33), however, concludes that this is "not necessarily true for farms producing commodities covered by farm programs." He points out that while certain farm program provisions discourage farm growth (e.g., acreage set asides, allotments, payment limits, and quotas), other provisions encourage farm growth by stabilizing and increasing farmers' incomes (e.g., price supports, target prices, disaster payments, and export enhancements). This latter view is supported by Gardner (1978) and Stanton (1978).

Several firm-level, policy analyses over the past 5 years suggest that farm programs provide income necessary for growth of middle-size and large-scale farms (Smith 1982; Richardson and Smith 1985a, 1985b; OTA 1986). Middle-size farms are more dependent upon farm programs for their survival and growth than are either large-scale or small farms. In the absence of farm programs, middle-size farms in Texas, Mississippi, Nebraska, and Illinois would decline in number while large-scale farms would continue to grow and prosper. An update of these studies, under alternative farm programs, recently showed this relationship still holds for wheat and cotton farmers (Knutson et al. 1987). The primary reason for this result is that middle-size farms are more vulnerable to risk and they operate with a narrower profit margin than larger scale farms. Smaller scale farms are less dependent than middle-size farms on government programs for their survival because of higher levels of off-farm income.

Factors affecting rural community structure

Factors affecting rural community structure have received considerably less attention than those affecting farm structure. This section emphasizes those factors that influence the number, size, and viability of rural communities: proximity to urban centers, economies of size, and the structure of agriculture.

Proximity to urban centers

Schultz (1953) observed that one of the important factors influencing the prosperity of agriculture and rural communities was their proximity to urban-industrial centers of economic development. The prosperity of agriculture is influenced because production is closer to markets, land values are less determined by agriculture, and off-farm employment is easier to secure during periods of excess capacity.

Because of this influence, it is not surprising that the counties and cities experiencing declines in farm population are the ones that are more remote from urban centers (Murdock and Hwang 1985). Financial stress in East Texas is

not as great as it is in West Texas (Murdock et al. 1985). In the Upper Midwest, the most severe financial stress would be expected to be in rural areas remote from larger population centers such as Chicago.

Economies of rural community and business size

Like agriculture, businesses and rural communities experience substantial economies of size. The optimal size of business has increased markedly over time. This increase has been associated with the greater complexity of production and marketing processes as well as with the high fixed costs involved in running a business. More complex business operations require greater specialization and thus necessitate a larger scale operation.

Much the same phenomena confronts rural communities attempting to survive and adjust to change. A community wishing to grow requires large investments in its infrastructure in order to attract new businesses and employment opportunities. In addition, rural communities must maintain their existing infrastructure. The problems are complicated by the continuously increasing demands of rural residents for higher levels of business and government services. Rural residents demand the same level of medical services and the same variety of business services they can obtain in the bigger city. If they cannot obtain those services locally, they will commute to bigger cities for them. The ever increasing mobility of the population, coupled with improving information and transportation systems, has led to a continued expansion of urban market areas and increased competition for businessmen in rural communities. These trends are not likely to abate, and rural communities will continue to feel the pressure.

Farm structure

The structure of farming has an important, but not necessarily decisive, impact on the structure, well-being, and survival of rural communities. It stands to reason that as the number of farms declines, holding nonfarm in-migration constant, the rural population will likewise decline. With a smaller number of people in rural areas, the amount of economic activity in rural communities will likewise decline.

Similar effects might be anticipated from a reduction in farm prices and income. In numerous cases, extended periods of low farm incomes have created substantial economic stress in rural communities, as farmers in the surrounding area reduce their level of input use and production in response to lower crop and livestock prices. The loss of economic activity in rural communities, in turn, threatens the economic viability of small-scale farmers because they depend more heavily on off-farm income than middle-size and large-scale farms.

Long-term continuation of the pressures toward fewer but larger farms, combined with rapid technological change, could lead to a highly industrialized farm structure, comparable to that in California, Florida, and parts of

Texas. Sociological studies of economic conditions and the quality of life, e.g., Goldschmidt's (1944) analysis of Arvin and Dinuba, have led to the conclusion that industrialized agriculture is associated with increased rural poverty, substandard living conditions, and a breakdown of social linkages needed to solve rural problems.

The relationship between increasing concentration of farming and community welfare is not necessarily linear as Goldschmidt (1944) reported. More recently, the OTA (1986, p. 221-227) study concluded the relationship may in fact be an inverted U shape. Community welfare increases initially as concentration increases but begins to decline as agriculture progresses toward an industrialized structure. This hypothesis was based largely on the inability to confirm the Goldschmidt (1944) linear relationship hypothesis in regions of the country other than California, Texas, and Florida.

One of the factors that may make the relationship between community welfare and structure considerably more complex is the degree of dependence on unskilled hired labor. Agriculture in California, South Texas, and Florida is highly dependent on unskilled labor. The labor market in these regions, however, is complicated by an abundance of unskilled labor flowing from Mexico and South American countries. This labor oversupply situation is aggravated by the continuous adoption of technology that displaces unskilled labor. These conditions are markedly different from most other agricultural regions of the country.

Improvements in community welfare associated with reductions in farm numbers in other regions may have been the result of increased international competitiveness during the 1970s. A different conclusion might be reached in the 1980s, which have been characterized by declining farm incomes and numbers. This is not to argue that farm structure has no effect on the welfare of rural communities, but rather to suggest that many factors in addition to the trend toward industrialization of agriculture play an important role.

Policy implications

There is little evidence to support the notion that traditional agricultural programs, which support farm prices and incomes, result in fewer but larger farms. If anything, a decisive move toward less government involvement in agriculture would likely accelerate the rate of concentration in agriculture. Middle-size farms are less able to withstand and control the risk involved in agriculture. The best prescription for an industrial agriculture would be a continuation of current federal income tax incentives for investing in agriculture combined with a rapid de-escalation of the level of government price and income support.

The structure of agriculture cannot be frozen, as some have suggested. Economic and technological pressures for change are simply too strong. This reality can best be seen in tobacco, sugar, and peanut farming where U.S. production has become so inefficient that it is impossible to compete

in the world market. Deregulation of these industries would result in a marked shift in production location even within the United States. Likewise, the dairy program has maintained an antiquated system of price supports and marketing orders distorting both total and regional patterns of production. Implementing similar production control or price enhancement programs for other commodities in an effort to restrict structural change would create similar problems, and overtime would increase the domestic prices of food and fiber. Policies that stifle competitiveness will be counterproductive in terms of helping rural communities cope with low farm incomes and structural change.

This is not to argue that current programs are perfect. Income support levels (target prices) have insulated producers from signals regarding the actual level of demand for their products. Increased emphasis needs to be placed on technology creation and transfer to middle-size farms, so they can maintain their competitiveness in domestic and world markets.

With regard to rural community development policy, the basic problem is that there has been very little. Legislation has been enacted but inadequately funded. Insufficient emphasis has been placed on feasibility analysis and skills training. The 1985 farm bill can easily be characterized as a transition bill offering producers a chance to get out of agriculture as government involvement is reduced. Yet, there was little attention given to retraining and relocation of the displaced farmers. The conservation reserve provisions could easily have been changed to an emphasis on transferring land and human resources out of agriculture. Such policy changes require that farmers, farm organizations, rural community interest groups, and politicians face up to the reality of what is happening and the impossibility of preventing change. The time has come for pragmatic transition policies.

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